Welcome!

U.S. Army Corps of Engineers
Coastal Inlets Research Program

Fourth Annual CIRP Tech-Transfer Workshop
In cooperation with
Florida Shore and Beach Preservation Association
2003 National Conference on Beach Preservation Technology

February 10-12, 2003
Sawgrass Marriott Resort
Ponte Vedra Beach, FL

Attendee Composition

- Corps of Engineers – 7 Districts
- City, county, state planners and engineers
- Consulting companies
- University faculty and students

Rudee Inlet, VA

CIRP -- Coastal Inlets, the Corps, and Navigation

THE UNITED STATES CONSTITUTION (ratified June 21, 1788)

We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

Article. I., Section. 8.

Clause 3: To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes;

Note: In January 1786, the Legislature of Virginia passed a resolution . . . to take into consideration the trade of the United States; to consider how far a uniform system in their commercial regulations may be necessary to their common interest and their permanent harmony; and to report to the several States such an act, relative to this great object, as, when ratified by them, will enable the United States in Congress effectually (sic) to provide for the same.

More than 150 federally maintained inlets; more than 600 inlets in U.S.

CIRP-- Tools to address O&M issues such as:

- Advance maintenance dredging
- Deepening, widening of channels
- Jetty modification
- Channel reliability
- Scour reduction
- Bypassing to adjacent beaches
- Ebb/flood shoal mining
- Efficiency of engineering studies
- Surveying & monitoring

Grays Harbor, WA

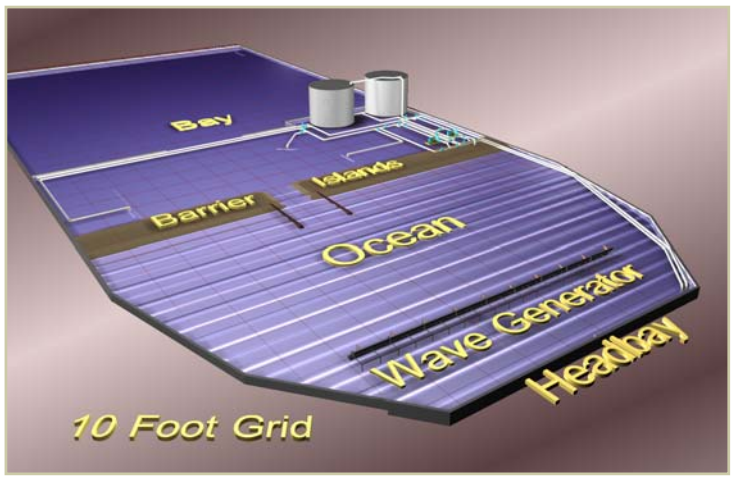
CIRP -- Objectives

- **Conduct R&D to reduce O&M costs at inlet navigation projects**
- **Treat inlet channels & adjacent beaches as a system**
- **Transfer technology**
  - Guidance documents, Workshops
  - Engineering models, Web site, Databases
  - Advanced models, PC software

Shinnecock Inlet, NY
West Jetty

CIRP – Six Technical Work Units

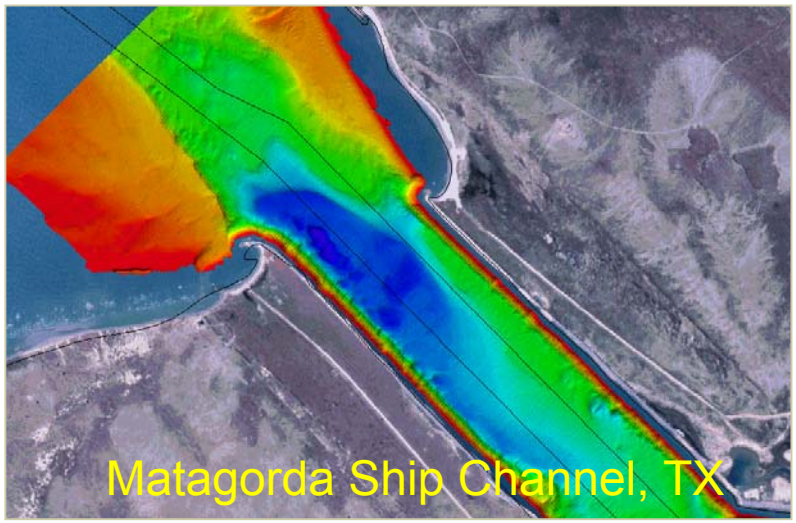
- **Inlet Engineering and Laboratory Investigations** – Bill Seabergh

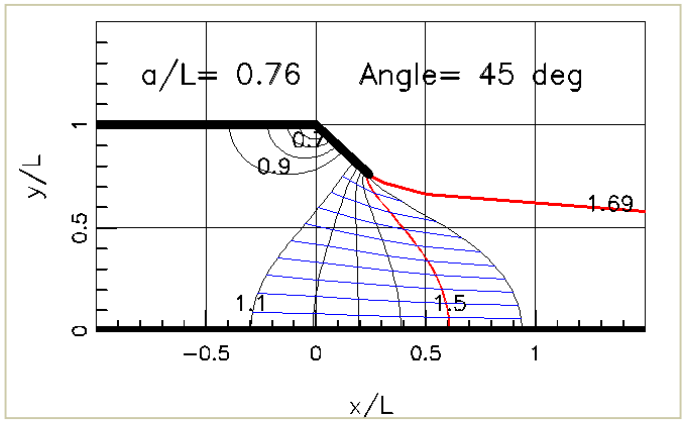


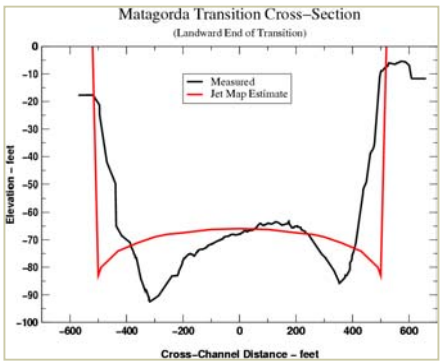
Idealized Inlet Physical Model

CIRP – Six Technical Work Units

- **Scour and Inlet Structures** – Steve Hughes



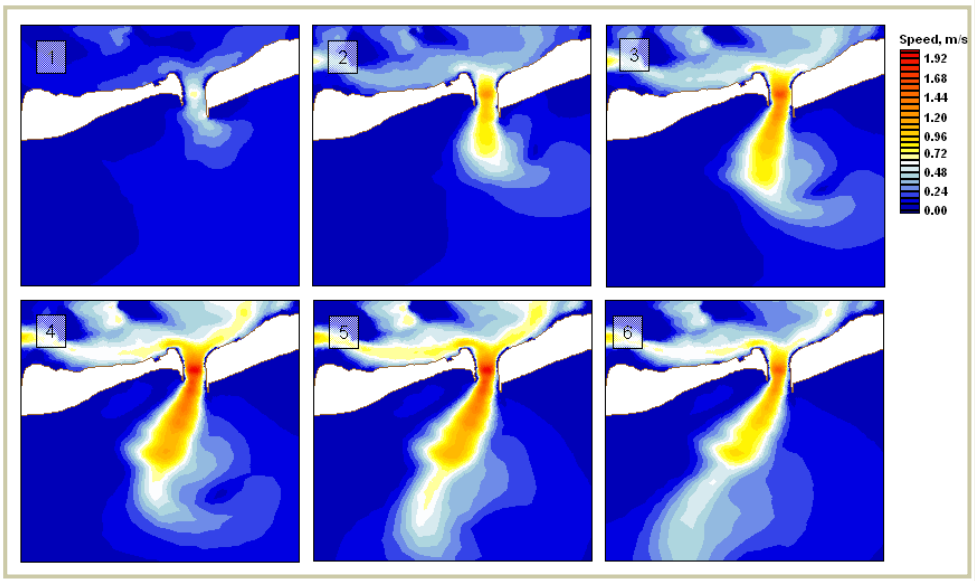




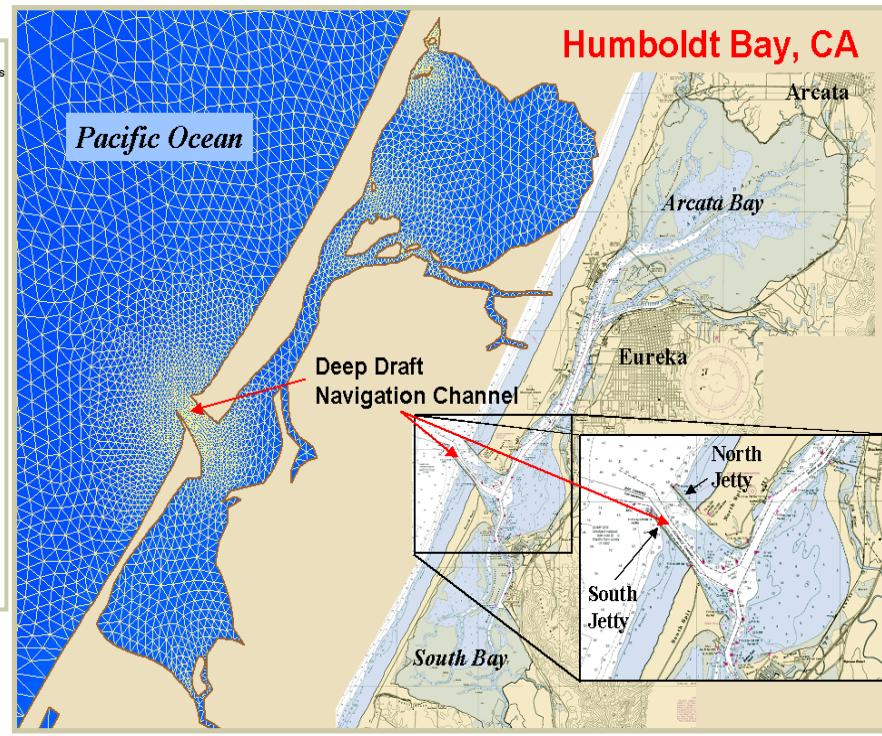
Flow separation at Shinnecock Inlet

CIRP – Six Technical Work Units

- **Inlet Modeling System (IMS)** – Mary Cialone, Zeki Demirbilek

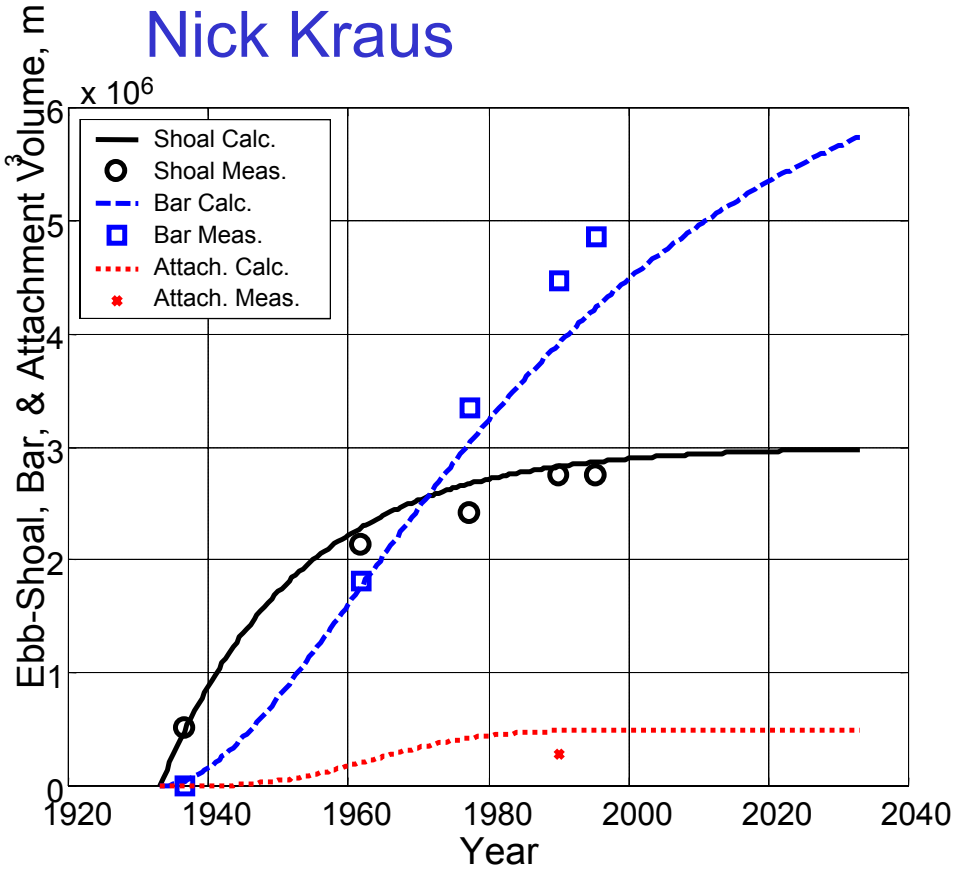


Ebb jet advection and channel migration



CIRP – Six Technical Work Units

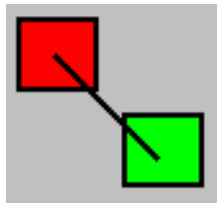
- **Inlet Geomorphology and Channel Evolution** – Nick Kraus

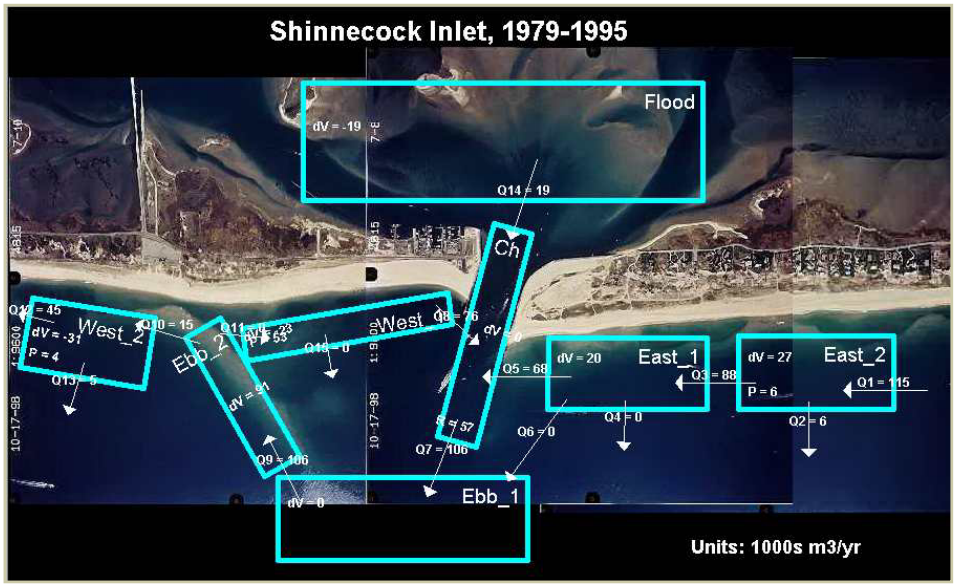


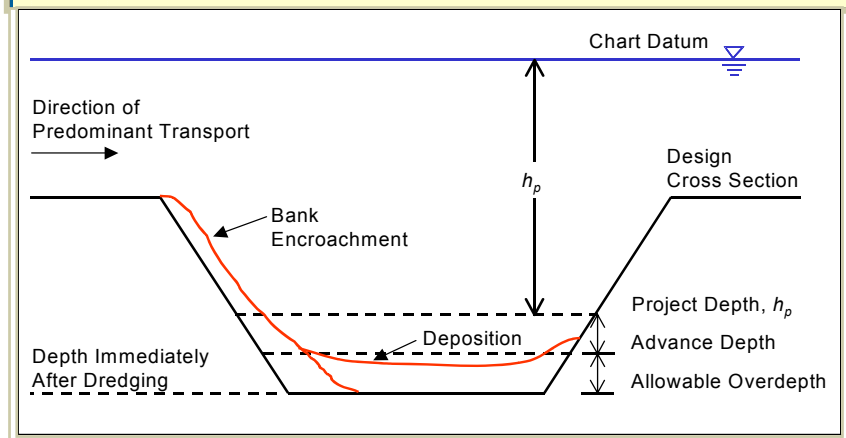
Ocean City Inlet, MD

CIRP – Six Technical Work Units

- **Inlet Channels and Adjacent Shorelines** – Julie Rosati



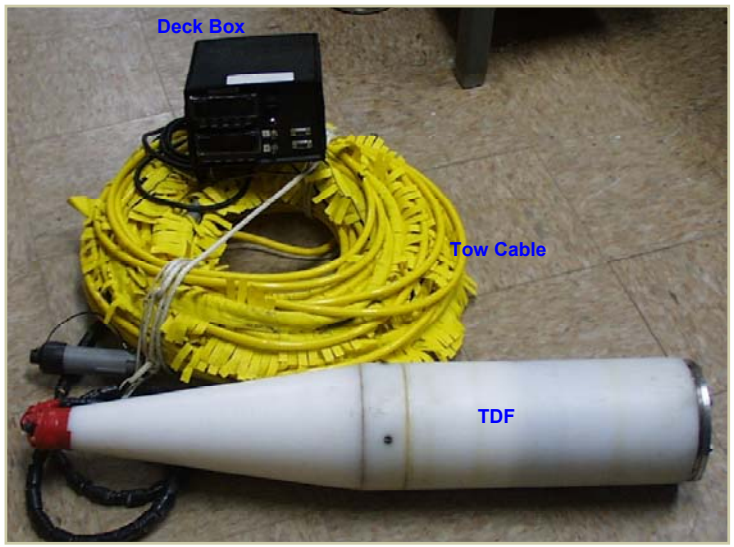


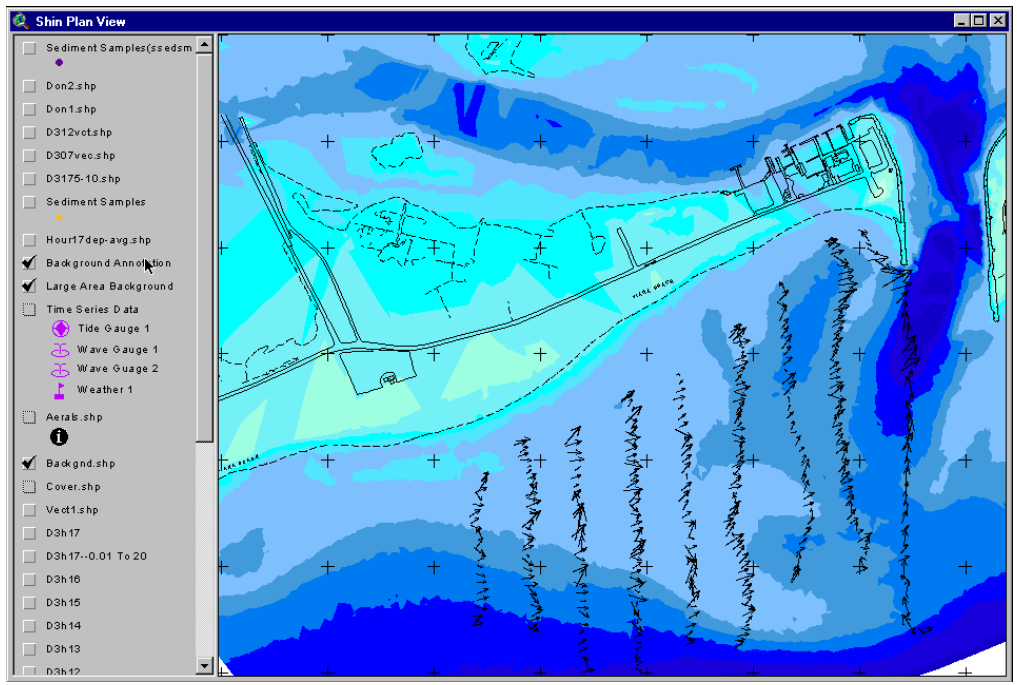


CIRP – Six Technical Work Units

- **Inlet Field Investigations** – Thad Pratt

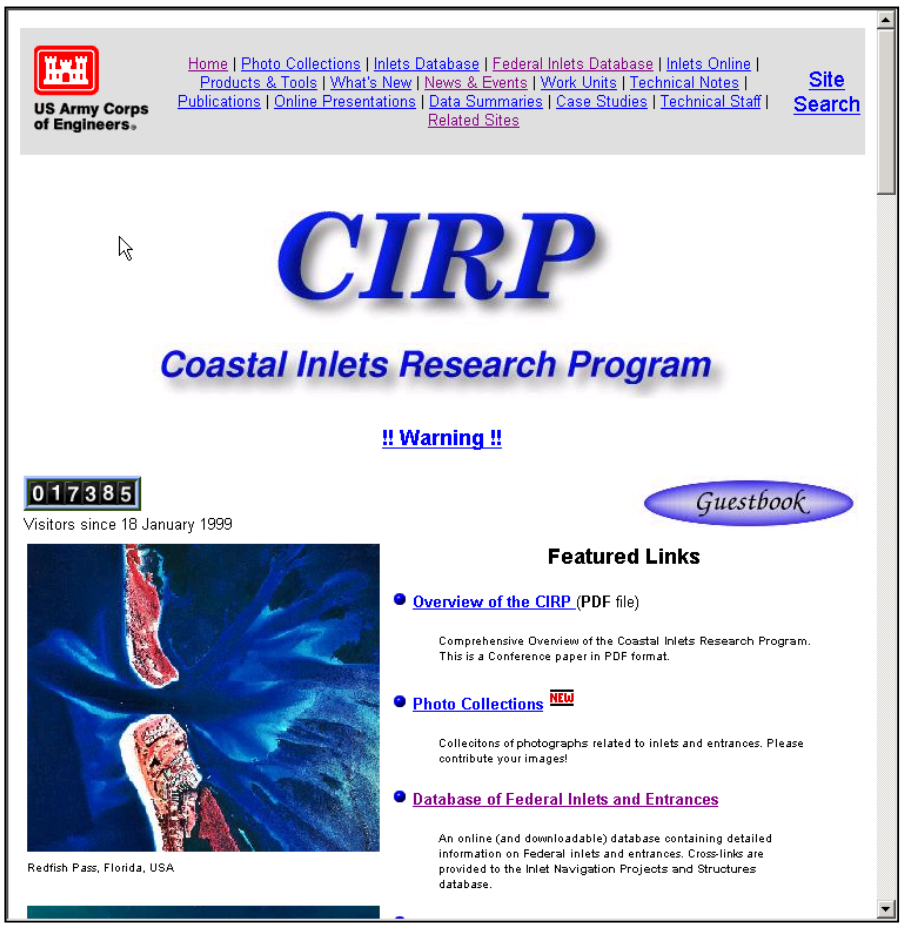
Towed Density Follower





CIRP Web Site

http://cirp.wes.army.mil/cirp/cirp.html



Features

- Publications / Technical Notes
- Databases of US inlets and structures
- Photographs
- On-line applications
- News and upcoming events

Prediction and Modeling of Sediment Transport and Morphology Change at Beaches and Inlets

U.S. Army Corps of Engineers
Coastal Inlets Research Program
4th Annual Technology-Transfer Workshop

February 10-12, 2003
Sawgrass Marriott Resort, Ponte Vedra Beach, FL

In cooperation with
Florida Shore and Beach Preservation Association
National Conference on Beach Preservation Technology
February 12-14, 2003

Sunday, February 9

7:00-8:00 pm	Laptop Preparations: Load Software (All Attendees)

Monday, February 10

8:00 a.m.	Registration, Laptop Preparations: Load Software
Part 1: Inlet Processes and Engineering Tools (Plenary Session)	
8:30 a.m.	Welcome, Introduction to the CIRP, Workshop Overview (Nick Kraus)
9:00 a.m.	Inlet Morphology for Coastal Engineering (Gary Zarillo & Kraus)
10:00 a.m.	Coffee Break
10:20 a.m.	Inlet and Regional Sediment Budgets (SBAS) (Julie Rosati)
11:20 a.m.	Inlet Reservoir Model (PC program) (Kraus)
12:00 noon	Lunch (provided by FSBPA)/Load Software
1:00 p.m.	Scour Prediction and Protection at Inlets (Steve Hughes)
2:00 p.m.	Channel Infilling Model (Kraus & Rosati)
2:40 p.m.	Coffee Break
3:00p.m.	Structures and Strategies to Manage Sediments at Inlets (Seabergh)
4:00 p.m.	Demonstration of Web-based Tools (Inlets database, Inlets Online) (Hughes, Rosati)
5:00 p.m.	Adjourn

Tuesday, February 11

Part 2: Numerical Modeling at and Around Inlets		
	Session G: GENESIS-T G-Team Leaders: Mark Gravens, Hans Hanson (limited to 15 attendees)	**Session H: Engineering Analysis at Tidal Inlets** H-Team Leaders: Lee Butler, Bill Seabergh
8:00 a.m.	Overview of session (Gravens) Introduction to CEDAS & Beach Processes Module	Overview of session (Seabergh) 1. Introduction to Inlet Hydrodynamics: Inlet functions, characteristics, variables, and flow patterns; Keulegan repletion coefficient; example problems Fresh water inflow, example problem; Tidal dispersion & mixing, example problem; wave-current interaction in channels, example problem
8:30 a.m.	GENESIS-T formulation of upgrades (Hanson/Wamsley) • Tombolo & bypassing • Regional trend contours • Tidal currents • Variable wave transmission	
9:15 a.m.	NEMOS System Components & Typical Procedures (Gravens) • When to use GENESIS-T	
10:00 a.m.	Coffee Break	
10:20 a.m.	GENESIS-T Demonstration (Gravens/Wamsley) • Offshore waves • Nearshore waves o grid generation o nearshore stations o input wave conditions • Structure specifications • Simulation & Visualization	2. Hydrodynamics & Sediment Interaction at Tidal Inlets (Seabergh) Tidal prism – channel area relationships, example. Inlet stability analysis, example.
12:00 noon	**Lunch (provided by FSBPA)**	
1:00 p.m.	Orientation to Hands-on Application (Gravens) • Development of computational domains (STWAVE/GENESIS) • Available data • Design teams/detailed design goals	3. Application of CEDAS to Inlet Environments (Butler) NMLong-WC: Model setup and applications STWAVE: • Grid generations • Wave conditions

2:40 p.m.	Coffee Break	
3:00 p.m.	Hands-On Application (Gravens/Hanson/Wamsley) • Structural lay-out & simulation • Alternative analysis	DYNLET 1+D Hydrodynamics • Grid generation • Model input requirements • Example application Empirical Simulation Technique (EST) • Capabilities • Storm Selection • Example application
5:30 p.m.	Adjourn	

Wednesday, February 12

Part 2, Concluded: Numerical Modeling at and Around Inlets

	Session G: GENESIS-T	**Session S: SMS Steering Module and Sediment Transport** S-Team Leaders: Mary Cialone, Adele Militello
8:00 a.m.	• Review (Gravens)	• Overview of session (Cialone)
8:15 a.m.	Hands-On Application (Gravens/Hanson/Wamsley) • Alternative analysis • Presentation preparation	• M2D Circulation Model (Militello) - Capabilities - Coupling with models - Sediment transport
9:00 a.m.		• Demonstration – Steering Module Modeling Results (Cialone and Militello)
9:30 a.m.	Coffee Break	
9:50 a.m.	Design Team Presentations	• Demonstration – M2D Tutorials (Cialone and Militello)
11:30 a.m.	Summary/Questions Evaluation	
12:00 noon	Adjourn	

Workshop Instructors

Lee Butler, VeriTech
Mary Cialone, CHL
Mark Gravens, CHL
Hans Hanson, U. of Lund, Sweden
Steve Hughes, CHL
Adele Militello, Coastal Analysis, LLC
Julie Rosati, CHL
Nick Kraus, CHL
Bill Seabergh, CHL
Ty Wamsley, CHL
Gary Zarillo, Florida Institute of Technology

Workshop given by

- U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory (CHL), Coastal Inlets Research Program – http://cirp.wes.army.mil/cirp/cirp.html
- VeriTech, Inc – http://veritechinc.com

In cooperation with

- Florida Shore & Beach Preservation Association – http://www.fsbpa.com